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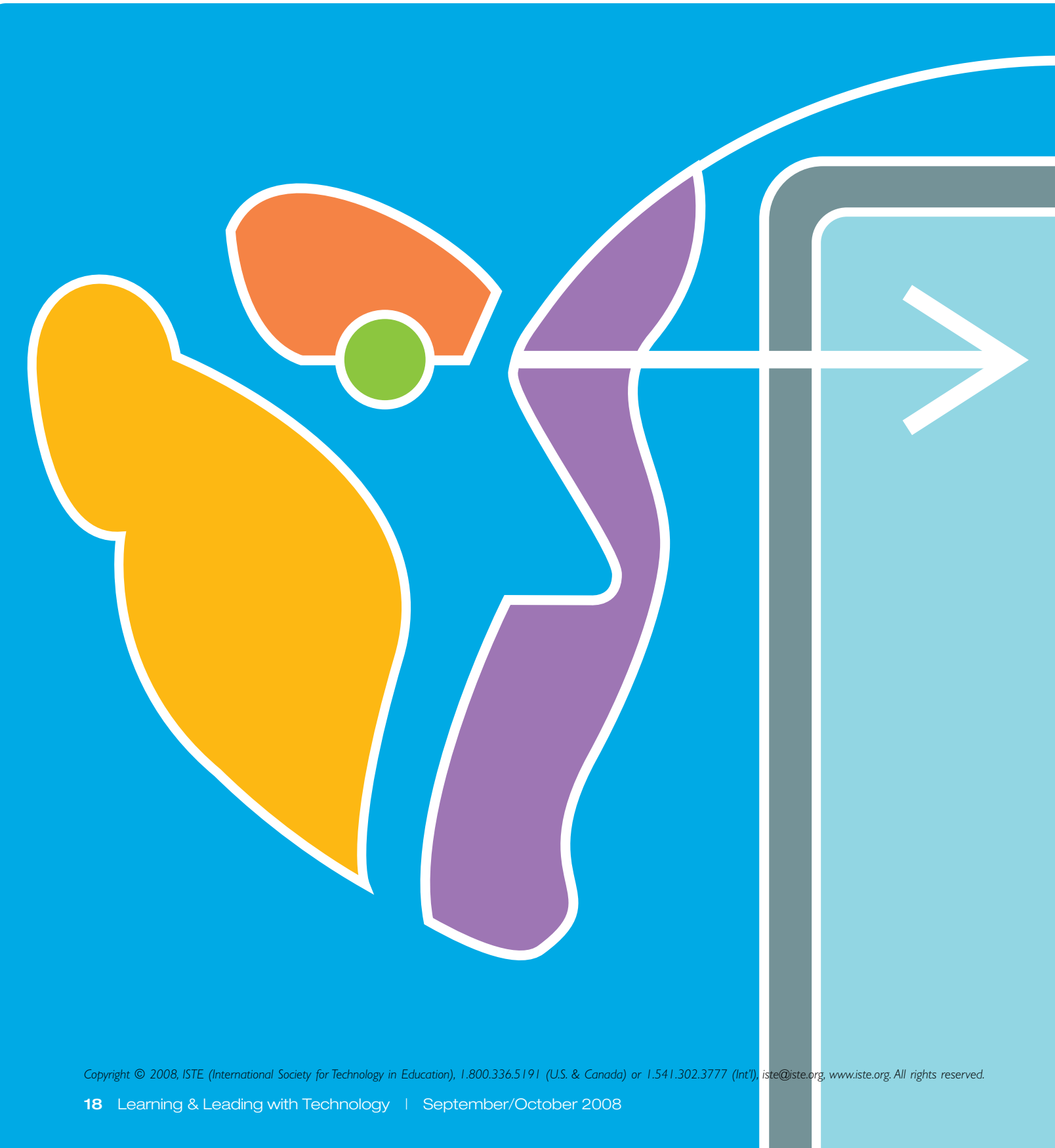
Envisioning Effective



Laptop Initiatives

Like other segments of our society, school districts have readily adopted computers as tools within their organizations. The impressive achievement of improving the amount of hardware, networking capability, and Internet access throughout the 1990s has been remarkable. With these improvements, advocates for technology in schools have argued that with increased access, changes in teaching and learning would materialize. Although U.S. schools currently have nearly a 4:1 student-to-computer ratio and Internet access within schools is at nearly 99%, questions remain about whether teachers use these technologies in meaningful ways to improve teaching and learning. Although schools have made tremendous improvements, many advocates for technology use in schools argue that the ratio needs to narrow so that each student has a personal computing device, and that only within a 1:1 context will students and teachers be able to truly harness the power of technology to improve teaching and learning.

Careful consideration of teachers' instructional practices—and whether current practices support effective technology use by students—should be the foundation for district decision-makers before jumping into a 1:1 laptop initiative.

As advocates for effective integration of technology and the instructional process, we have integrated technology in our own work with students and attempted to model ways that encourage preservice teachers to use technology within their own (eventual) practice with students. Our intention, therefore, is not to say laptops are bad or that schools and teachers should not pursue new technologies. Instead, we want to re-emphasize the importance of thoroughly thinking through how these technologies are going to support meaningful instruction and determining whether that instructional vision is supported by building-level administrators and teachers.

Careful consideration of teachers' instructional practices—and whether current practices support effective technology use by students—should be the foundation for district decision-makers before jumping into a 1:1 laptop initiative. The history of technology adoption in K–12 schools has demonstrated that for those who used technology it was great, but for those who didn't, it hasn't changed much of anything about their instructional choices. Looking at our own experiences in public schools and in teacher education, the hardware was the easy part. Getting people to make instructional choices that supported use of these new tools within their courses was another story.

A recent survey of 74 building-level school administrators in Indiana challenged many of the assumptions regarding 1:1 laptop initiatives and how 1:1 access would affect teaching and learning. (See survey highlights on page 20.) It also revealed disturbing realities regarding instructional practices of teachers, as well as efforts to improve school technology integration. The intent of the survey was to identify administrators' perspectives regarding technology priorities within their schools and their perceptions toward digital portfolios in the hiring process. However, embedded in the survey were questions regarding the administrators' observed instructional technology use by teachers, along with questions regarding administrators' current technology infrastructure. When factoring differences between observed instructional practices and infrastructure, results resurrect a challenge to the assumption made by 1:1 advocates: Without a well-articulated and supported vision of technology integration by teachers and administrators, adding new technologies to the school and classroom will have minimal effect on changing teachers' instructional practice and their technology use with students.

How About Those Technology Standards?

Indiana has referenced the National Educational Technology Standards for Teachers (NETS•T) and Administrators (NETS•A), but surprisingly, the building-level administrators have little knowledge of these standards. If the notion of national educational technology standards is to provide a framework of expectations and offer insight on how essential conditions within the school can support technology, the leaders of these schools have to be informed, knowledgeable, and supportive of instructional technology use.

Scant knowledge of NETS•A among participants raises questions regarding leadership. It also raises questions about instructional technology use as administrators wrestle with a variety of demands on their time and resources.

To create essential conditions for effective technology use in schools, there needs to be an increased emphasis regarding both the knowledge and support administrators provide to teachers who want to integrate technology with instruction.

What Are You Doing with Those Laptops?

One might think that once laptops were present, the use of technology as an integral part of instruction would be observable. One might even bet that having laptops would mean that access to digital tools would increase for students.

Unfortunately, that isn't the case. Table 1 shows the results of the types of instructional technology use occurring in the schools. While schools that had 1:1 laptop initiatives appeared to use technology daily, the instructional use of the technology available was far from the promise that 1:1 initiatives would increase collaborative, problem-based, and student-centered instructional practice. When comparing the observed instructional application of technology by administrators, schools with 1:1 initiatives indicated a low level of use. Administrators observed students in those schools using laptops to search for information and to word process. Schools without 1:1 initiatives, on the other hand, used the school's technology resources for more collaborative and problem-solving instructional activities, including group work and attention to multiple intelligences.

Differences in technology access between schools with 1:1 initiatives and those without do not appear to have an overwhelming benefit in the types of access available to students. (See Table 2.) The data suggest there are increases in some areas of access, but

Highlights from Survey of Building-Level Administrators

- Fewer than half reported that technology is a priority for their school budget (48.3%).
- Just under half considered technology use by teachers to be a priority (46.6%).
- Half considered technology use by students to be a priority (50%).
- Roughly half would provide technology support and training over other options, when given the opportunity (48.3%).
- Just over half reported teachers often sought assistance, guidance, or support specific to technology for their use (51.7%) and about the same for their students (50%).
- Nearly all reported it a daily occurrence for teachers to use basic technology (e.g., e-mail, Internet, word processing, PowerPoint, Web-based grading, Web-based communication with parents.) (98.2%).
- Approximately a third reported it a daily occurrence for teachers to use moderate technology (e.g., digital video, digital audio, Web-based learning activities.) (35.7%).
- More than half report that it was a daily occurrence for students to use technology for instructional purposes (59.6%).
- Only a fraction (10.5%) reported a daily occurrence of teachers using high-end technology (e.g., universally designed instruction, computer-based simulations, etc.)
- Nearly three-quarters defined technology in the school building as computer software and hardware (73.7%).
- As for awareness of the National Educational Technology Standards (NETS) more than a third were unaware that ISTE has identified technology standards for teachers (38.9%); for students (32.1%); for administrators (45.5%); and that ISTE has also identified conditions that support technology use in schools (40.0%).
- A little less than half are aware that new teachers are meeting NETS prior to graduation (36.8%); while nearly half were "very aware" that almost all undergraduate college students have access to a personal computer (43.6%).

Table 1: Observed Application of Instructional Technology With or Without Laptop Initiative		
	With	Without
Student use of technology for instructional purposes or class work is a daily occurrence	80%	52%
Students' use of technology to develop projects or complete expectations for project-based learning activities	40%	62%
Students' use of technology to access information	60%	43%
Attention to multiple intelligences	20%	48%
Use of group work	60%	94%

Table 2: Daily Access to Digital Technologies at School		
Daily access by students	With	Without
E-mail	40%	20%
Internet	40%	52%
CDs and Multimedia	20%	25%
Digital Ancillary Materials from Textbook	0%	27%
Digital Cameras	20%	21%
Digital Video Cameras	29%	15%

what averages out to a 14% increase in total access might not be the overwhelming support that a 1:1 initiative seeks. These minimal differences in access additionally stress the question of the instructional purpose of technology in the school and classroom.

According to our survey of building-level administrators, it appears the enthusiasm to implement 1:1 technology initiatives is just as haphazard in the K–12 environment as it is in the higher education training of our preservice teachers. Data provided by administrators call attention to the instructional choices being made by teachers and whether technology is supporting what we know about good instructional practice.

If districts adopt a 1:1 initiative, what is the vision behind it? This should be the No. 1 question for administrators considering a laptop initiative. We argue that administrative decision-makers should think through how they hope to see teachers using these devices instructionally with students before making the investment, and then facilitate supportive structures within the teaching context that can make that vision a reality.

A laptop initiative can be as cost effective or as costly as we make it. Challenges and costs of technology support, instructional support, and sustainability are often left unexplored as districts consider 1:1 initiatives, leaving equipment unused and teachers going back to traditional instructional practices. If districts pursue 1:1 initiatives and make the investments required to create an instructional vision of how laptops will improve instruction and student learning, then the inclusion of these new technologies offers tremendous potential. Without vision and support, ineffective or inappropriate technology use by teachers and students will provide easy fodder for critics of technology in education, and 1:1 initiatives will fail those who hope technology can improve the instructional practice of teachers.

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